Amendments to the Claims:

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Please cancel claim 2 without prejudice.

Please amend claims 1 and 3 as follows:

1. (currently amended) A method, comprising:

directing a first optical beam of a first wavelength and a first power level into a first ring resonator defined in a semiconductor material;

causing emission of a second optical beam of a second wavelength in the first ring resonator by propagating the first optical beam around the first ring resonator, wherein the first power level is sufficient to cause the emission of the second optical beam; and

directing the first optical beam out of the first ring resonator after a round trip of the first optical beam around the first ring resonator; and

recirculating the second optical beam around the first ring resonator to further stimulate the emission of the second optical beam in the first ring resonator; and

generating the second optical beam as an output from the first ring resonator by leaking out a portion of the second optical beam recirculated around the first ring resonator.

Claim 2 (canceled).

3. (currently amended) The method of claim [[2]]1 wherein generating the second optical beam as the output from the first ring resonator further includes separating the second optical beam leaked out from the first optical beam directed out of the first ring resonator.

4. (original) The method of claim 1 further comprising:

directing the first optical beam directed out from the first ring resonator into a second ring resonator defined in the semiconductor material;

causing emission of a third optical beam of a third wavelength in the second ring resonator by propagating the first optical beam around the second ring resonator, wherein the first power level is sufficient to cause the emission of the third optical beam; and

directing the first optical beam out of the second ring resonator after a round trip of the first optical beam around the second ring resonator; and

recirculating the third optical beam around the second ring resonator to further stimulate the emission of the third optical beam in the second ring resonator.

5. (original) The method of claim 4 further comprising generating the third optical beam as an output from the second ring resonator by leaking out a portion of the third optical beam recirculated around the second ring resonator.

6. (original) The method of claim 5 wherein generating the third optical beam as the output from the second ring resonator further includes separating the third optical beam leaked out from the first optical beam directed out of the second ring resonator.

7. (original) The method of claim 1 wherein causing the emission of the second optical beam of the second wavelength in the first ring resonator comprises causing stimulated Raman scattering (SRS) in the first ring resonator with the first optical beam.

8. (original) The method of claim 7 wherein the second optical beam has a frequency that is substantially equal to a Stokes frequency of the SRS that occurs in the first ring resonator.

9. (original) The method of claim 4 wherein causing the emission of the third optical beam of the third wavelength in the second ring resonator comprises causing stimulated Raman scattering (SRS) in the second ring resonator with the first optical beam.

10. (original) The method of claim 9 wherein the third optical beam has a frequency that is substantially equal to a Stokes frequency of the SRS that occurs in the second ring resonator.

11. (original) An apparatus, comprising:

a first optical coupler defined in a semiconductor material, the first optical coupler including first and second inputs and first and second outputs; and

a first ring resonator defined in the semiconductor material with the second output of the first optical coupler optically coupled to the second input of the first optical coupler through the first ring resonator, the first optical coupler to transfer a first optical beam of a first wavelength having a first power level received at the first input of the first optical coupler to the second output of the first optical coupler, the first optical coupler to transfer

the first optical beam received at the second input of the first optical coupler to the first output of the first optical coupler, wherein the first power level is sufficient to cause emission of a second optical beam of a second wavelength when the first optical beam is propagated in the first ring resonator, the first optical coupler to transfer most of the second optical beam received at the second input of the first optical coupler to the second output of the second optical coupler.

12. (original) The apparatus of claim 11 further comprising a second optical coupler defined in the semiconductor material, the second optical coupler including an input and first and second outputs, the input of the second optical coupler optically coupled to the first output of the first optical coupler, the second optical coupler to transfer the first optical beam received at the input of the second optical coupler to the first output of the second optical coupler, the second optical coupler to transfer the second optical beam leaked from the first ring resonator and received at the input of the second optical coupler to the second output of the second optical coupler.

13. (original) The apparatus of claim 12 further comprising:

a third optical coupler defined in the semiconductor material, the third optical coupler including first and second inputs and first and second outputs, the first input of the third optical coupler optically coupled to the first output of the second optical coupler; and

a second ring resonator defined in the semiconductor material with the second output of the third optical coupler optically coupled to the second input of the third optical coupler through the second ring resonator, the third optical coupler to transfer the first optical beam received at the first input of the third optical coupler to the second output of the third optical

coupler, the third optical coupler to transfer the first optical beam received at the second input of the third optical coupler to the first output of the third optical coupler, wherein the first power level is sufficient to cause emission of a third optical beam of a third wavelength when the first optical beam is propagated in the third ring resonator, the third optical coupler to transfer most of the third optical beam received at the second input of the third optical coupler to the second output of the third optical coupler.

14. (original) The apparatus of claim 13 further comprising a fourth optical coupler defined in the semiconductor material, the fourth optical coupler including an input and first and second outputs, the input of the fourth optical coupler optically coupled to the first output of the third optical coupler, the fourth optical coupler to transfer the first optical beam received at the input of the fourth optical coupler to the first output of the fourth optical coupler, the fourth optical coupler to transfer the third optical beam leaked from the second ring resonator and received at the input of the fourth optical coupler to the second output of the fourth optical coupler.

15. (original) The apparatus of claim 11 wherein the semiconductor material comprises silicon and wherein waveguides included in the first ring resonator and the first optical coupler include respective cores comprised of silicon.

16. (original) The apparatus of claim 11 wherein the first optical beam causes stimulated Raman scattering (SRS) in the first ring resonator.

17. (original) The apparatus of claim 16 wherein the second optical beam has a frequency that is substantially equal to a Stokes frequency of the SRS that occurs in the first ring resonator.

18. (original) The apparatus of claim 13 wherein the first optical beam causes SRS in the second ring resonator.

19. (original) The apparatus of claim 18 wherein the third optical beam has a frequency that is substantially equal to a Stokes frequency of the SRS that occurs in the second ring resonator.

20. (original) The apparatus of claim 11 wherein the first optical coupler comprises:

a first optical waveguide disposed in the semiconductor material between the first input and the first output of the first optical coupler;

a second optical waveguide disposed in the semiconductor material between the second input and the second output of the first optical coupler;

an insulating region disposed between the first and second optical waveguides to provide a coupling region in the semiconductor material between the first and second optical waveguides, the coupling region having a first coupling length for the first optical beam directed into the coupling region, the coupling region having a second coupling length for the second optical beam directed into the coupling region.

21. (original) The apparatus of claim 11 further comprising a laser disposed in the semiconductor material to provide the first optical beam to the first input of the first optical coupler.

22. (original) A system, comprising:

a pump laser to generate a first optical beam of a first wavelength having a first power level;

a first optical coupler defined in a semiconductor material, the first optical coupler including first and second inputs and first and second outputs, the first input of the first optical coupler optically coupled to receive the first optical beam;

a first ring resonator defined in the semiconductor material with the second output of the first optical coupler optically coupled to the second input of the first optical coupler through the first ring resonator, the first optical coupler to transfer the first optical beam to the second output of the first optical coupler, the first optical coupler to transfer the first optical beam received at the second input of the first optical coupler to the first output of the first optical coupler, wherein the first power level is sufficient to cause emission of a second optical beam of a second wavelength when the first optical beam is propagated in the first ring resonator, the first optical coupler to transfer most of the second optical beam received at the second input of the first optical coupler to the second output of the second optical coupler; and

an optical receiver optically coupled to the first output of the first optical coupler to receive a portion of the second optical beam leaked from the first optical coupler.

23. (original) The system of claim 22 wherein the laser is disposed in the semiconductor material.

24. (original) The system of claim 22 wherein the first optical beam causes stimulated Raman scattering (SRS) in the first ring resonator.

25. (original) The apparatus of claim 24 wherein the second optical beam has a frequency that is substantially equal to a Stokes frequency of the SRS that occurs in the first ring resonator.

26. (original) The system of claim 22 further comprising a second optical coupler defined in the semiconductor material, the second optical coupler including an input and first and second outputs, the input of the second optical coupler optically coupled to the first output of the first optical coupler, the second optical coupler to transfer the first optical beam received at the input of the second optical coupler to the first output of the second optical coupler, the second optical coupler to transfer the portion of the second optical beam leaked from the first optical coupler and received at the input of the second optical coupler to the second output of the second optical coupler.

27. (original) The system of claim 26 further comprising:

a third optical coupler defined in the semiconductor material, the third optical coupler including first and second inputs and first and second outputs, the first input of the third optical coupler optically coupled to the first output of the second optical coupler; and

a second ring resonator defined in the semiconductor material with the second output of the third optical coupler optically coupled to the second input of the third optical coupler through the second ring resonator, the third optical coupler to transfer the first optical beam received at the first input of the third optical coupler to the second output of the third optical coupler, the third optical coupler to transfer the first optical beam received at the second input of the third optical coupler to the first output of the third optical coupler, wherein the first power level is sufficient to cause emission of a third optical beam of a third wavelength when the first optical beam is propagated in the third ring resonator, the third optical coupler to transfer most of the third optical beam received at the second input of the third optical coupler to the second output of the third optical coupler.

28. (original) The system of claim 27 further comprising a fourth optical coupler defined in the semiconductor material, the fourth optical coupler including an input and first and second outputs, the input of the fourth optical coupler optically coupled to the first output of the third optical coupler, the fourth optical coupler to transfer the first optical beam received at the input of the fourth optical coupler to the first output of the fourth optical coupler, the fourth optical coupler to transfer a portion of the third optical beam leaked from the second ring resonator and received at the input of the fourth optical coupler to the second output of the fourth optical coupler.

29. (original) The system of claim 27 wherein a round trip distance through the first ring resonator is different than a round trip distance through the second ring resonator.

30. (original) The system of claim 29 wherein the second wavelength is different than the third wavelength.